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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/623,023	10/20/2000	Keiji Hashimoto	107016	5472

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[REDACTED] EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 12/20/2002

18

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/623,023	HASHIMOTO ET AL.
	Examiner Susy N Tsang-Foster	Art Unit 1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 01 October 2002 and 20 August 2002.

2a) This action is FINAL.                  2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 9, 13, 14 and 17-19 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) 13, 14 and 17 is/are allowed.

6) Claim(s) 9, 18 and 19 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>10</u> .	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is responsive to the amendments filed on 8/20/2002 and 10/1/2002. Claims 1-8, 10-12, 15, and 16 have been cancelled. Claims 9, 13, 14, and 17 have been amended and claims 18 and 19 have added. Claims 13, 14, and 17 are allowed. Claims 9, 18, and 19 are finally rejected for reasons of record and for reasons necessitated by the amendment.

### ***Drawings***

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 8/20/2002 have been disapproved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

In the previous Office Action, the Examiner requested that Figure 1 be labeled as --Prior Art--.

Applicants instead have labeled Figure 1 as “Related Art”.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Amended claim 9 recites “a first separator placed in contact with one of the electrode plates and perforated to form a reaction chamber to be supplied with fuel gas” and “a second separator placed in contact with the other electrode plate and perforated to form a reaction chamber to be supplied with oxidizing agent gas”.

The specification does not disclose a first and second separator that are perforated to form reaction chambers. Instead, the specification discloses first and second separators that are composed of a perforated plate.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is indefinite because it is also unclear to the Examiner how the first and second separators that are perforated would be able to form reaction chambers because the gas would leak from the perforations.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 9 and 18 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 06-052881 A (JPO Machine Translation).

See Figures 11-13 and 20 and paragraphs 4, 5, 15, and 19 of machine translation of reference.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 9, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 05-074469 A in view of Kindler (USP 6,228,518 B), JP 61-284064 A and Maget (USP 4,648,955).

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JP 05-074469 A discloses a fuel cell comprising a cell function assembly including an electrolytic membrane; a pair of electrode plates assembled in contact with opposite surfaces of the electrolytic membrane, a first separator placed in contact with one of the electrode plates to form a reaction chamber to be supplied with fuel gas; and a second separator placed in contact with the other electrode plate to form a reaction chamber to be supplied with oxidizing gas; and the first and second separators are each composed of a perforated flat plate made of an insulation material and a plurality of conductive projections assembled with a plurality of mounting holes formed in the flat plate (See abstract, Figures 1-5, and paragraphs 2, 5, 7, and 8 of the machine translation of the reference).

JP 05-074469 A does not disclose that a set of current collector plates are assembled respectively in contact with the first separator at an outermost side of the cell function assembly and the second separator at another outermost side of the cell function assembly, that the electrode plates are each divided into a plurality of spaced plates, and that the current collecting plates are each divided into a plurality of spaced plate.

Kindler teaches a set of current collector plates are assembled respectively in contact with the first separator at an outermost side of the cell function assembly and the second separator at another outermost side of the cell function assembly (see Figure 3 and col. 6, lines 15-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a set of current collector plates assembled respectively in contact with the first separator at an outermost side of the cell function assembly and the second separator at another outermost side of the cell function assembly to provide for an anode terminal and a cathode

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terminal for the cell function assembly through which electricity generated by the cell function assembly is provided to an external load.

JP 61-284064 A teaches a current collecting plate located at the outermost end of the fuel cell stack (see Figure 1) that is divided into a plurality of spaced plates (see Figures 2-5) in order to increase the efficiency of current collection of the fuel cell (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a current collector that is divided into a plurality of spaced plates in the fuel cell of JP 05-074469 A because a fuel cell using current collectors having a plurality of spaced plates has an increased efficiency of current collection.

Maget teaches that electrode plates divided into a plurality of spaced plates in an electrochemical cell such as a fuel cell provides for an arrangement of many individual cells in one chamber thereby eliminating many chamber walls with space savings and the arrangement also increases the voltage by a factor given by the number of spaced plates of the electrode plates on a single electrolytic membrane compared to a single plate on a single electrolytic membrane with the same gas flow rate (see abstract and col. 1, lines 9-30 and lines 50-67),

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the electrode plates be divided into a plurality of spaced plates to increase the voltage output without increasing the bulk of the fuel cell which is important for small scale

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devices where the size of fuel cell is an important consideration as taught by Maget (col. 1, lines 40-50).

***Allowable Subject Matter***

12. Claims 13, 14, and 17 are allowed.
13. The following is a statement of reasons for the indication of allowable subject matter:

The present invention claims a method of manufacturing a separator comprising a flat plate with a plurality of projections made of a conductive material projected from the flat plate, the flat plate being made of synthetic resin, and the step of either heating a carbon powder under pressure containing a binder to form the projections (applies to claims 13 and 17) or pressing carbon powder with a binder to form the projections and heating the projections to melt the binder (applies to claims 14 and 17) with the distinguishing feature over the prior art of heating the projections with an electric current to melt the binder contained in the projections and cooling the projections to harden them in position in the separator.

The closest prior art of record, JP 61-253768 A discloses (NOTE-ORAL TRANSLATION OBTAINED FOR REFERENCE AT USPTO ON 3/25/2002) forming carbonaceous projections of a separator for a fuel cell by using raw materials comprising carbon particles and an organic granular substance (the binder) and heating at a temperature of 100-180 °C under 1-100 kg/cm<sup>2</sup> pressure for 1-60 minutes (see page 6) but does not disclose, teach or suggest heating under supply of an electric current to melt the binder contained in the projections.

***Response to Arguments***

14. Applicant's arguments filed 8/20/2002 have been fully considered but they are not persuasive.

*Applicant asserts on pages 5-6 of the amendment filed on 8/20/2002 what the individual references applied do not disclose or teach in relation to the claimed invention .*

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 7/10/2002 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Thursday from 9:30 AM to 8:00 PM.

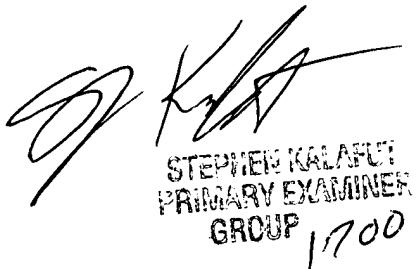
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9310 for regular communications and (703) 872-9311 for After-Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/16 December 2002



STEPHEN KALAFUT  
PRIMARY EXAMINER  
GROUP 1700